Conservation Element

Purpose

To become an international model of sustainable development and conservation. To provide for the long-term conservation and sustainable management of the rich natural resources that help define the City's identity, contribute to its economy, and improve its quality of life.

Introduction

Conservation is the planned management, preservation, and wise utilization of natural resources and landscapes. The Conservation Element contains policies to guide the conservation of the resources that are fundamental components of San Diego's environment, that help define the City's identity, and that are relied upon for continued economic prosperity. San Diego's resources include, but are not limited to: water, land, air, biodiversity, minerals, natural materials, recyclables, topography, views, and energy. Over the long term, conservation is the most cost-effective strategy to ensure that there will be a reliable supply of the resources that are needed now and in the future.

Sustainable conservation practices help ensure that future generations will be able to use and enjoy these resources to achieve and maintain a healthy and diverse environment and economy. Sustainability is a global issue that extends beyond the realm of City planning. However, local land use planning and resource management affect the economic vitality, natural environment and societal support that contribute to a sustainable San Diego. Sustainable, "clean," or "green" industries include those that are using or developing new technologies or processes to make better use of resources, to reduce pollution, to allow for greater use of renewable resources, or to achieve other environmental benefits.

The City of Villages strategy to direct compact growth in limited areas that are served by transit is, in itself, a conservation strategy. Compact, transit-served growth is an efficient use of urban land that reduces the need to develop outlying areas and creates an urban form where transit, walking and bicycling are more realistic alternatives to automobile travel. Reducing dependence on automobiles reduces vehicle miles traveled, which, in turn, lowers greenhouse gas emissions. Additionally, it improves water quality by decreasing automobile-related oil and gas leaks that pollute water bodies throughout the City.

Climate Change

Climate change is a growing concern for cities around the world. The burning of fossil fuels, such as coal and gasoline, as well as deforestation and other human activities are changing the composition of the atmosphere, causing concentrations of greenhouse gases such as carbon dioxide, nitrous oxide, and methane to increase significantly. The National Research Council has documented that the global average temperature during the last few decades was warmer than any comparable period during the last 400 years. As higher levels of greenhouse gases are emitted and global temperatures increase, there will be changes in rainfall patterns, snow and ice cover, and sea level. This could have significant impacts on the San Diego region in terms of water and energy availability, and coastal flooding. Additionally, as the temperature rises, there are more human health affects from air pollution and heat stress.

State and local governments have taken a leadership role in addressing mitigation and adaptation strategies for a changing climate. Specifically, the California Global Warming Solutions Act of 2006, (Assembly Bill 32), declares that "global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California" and requires that the state's global warming emissions be reduced to 1990 levels by the Year 2020. Assembly Bill 32 also directs the California Air Resources Board to develop regulations and establish a reporting and monitoring system to track global warming emissions levels.

The City of San Diego has taken steps to address climate change impacts at a local level. In 2002, the City Council adopted the San Diego Sustainable Community Program. This program established the partnership with the Cities for Climate Protection (CCP) Campaign, which is a program administered by the International Council for Local Environmental Initiatives (ICLEI). To date, more than 800 local governments worldwide participate in the campaign, including 30 cities and counties located in California. The campaign is based on a performance framework structured around five milestones that local governments commit to undertake. Local governments identify the source of greenhouse gas emissions, calculate the volume contributed from energy use, transportation, and waste management, and then develop an action plan to reduce those emissions. The Sustainable Community Program also established San Diego's Greenhouse Gas (GHG) reduction goal of 15 percent below 1990 levels by the year 2010.

The City has a Climate Protection Action Plan that addresses both the GHG emissions from the community (residential, commercial and industrial sectors) and the GHG emissions specifically from the operations provided by City government. Each category is broken down into the three major sources: Energy, Waste and Transportation. The GHG emissions are tracked using a standardized computer software program, and the comparison between 1990 and 2004 reveal an interesting trend. The City organization has continued to reduce its share of greenhouse gas emissions through fuel efficiency, energy conservation and the use of renewable energy, and the use of methane gas (biogas) to generate electricity. While this is a good step forward, the larger community has increased the per capita fuel, energy and water use.

Policies which address local GHG mitigation strategies in San Diego are integrated within the General Plan. Together, this collection of policies support and promote the adopted recommendations outlined in the City's Climate Protection Action Plan. The City continues to investigate additional steps that can be taken to help reduce greenhouse gas emissions, identify adaptation goals, and curb the impact of climate change at the local level.

TABLE CE-1 Issues Related to Climate Change Addressed in the General Plan

Issues	General Plan Policy		
	Element	Section	Policy
City of Villages Strategy	Conservation	A. Climate Change and Sustainable Development	CE-A.2
		B. Open Space and Landform Preservation	CE-B.1 through CE-B.5
	Land Use and Community Planning	A. City of Villages Strategy	LU-A.1 through LU-A.11
		H. Balanced Communities and Equitable Development	LU-H.6; LU-H.7
		I. Environmental Justice	LU-I.9 through LU-I.11
	Mobility	A. Walkable Communities	ME-A.1 through ME-A.9
		B. Transit First	ME-B.1 through ME-B.10
		F. Bicycling	ME-F.2; ME-F.4; ME-F.5
		K. Regional Coordination and Financing	ME-K.2; ME-K.6
	Urban Design	A. General Urban Design	UD-A.1; UD-A.2; UD-A.3;UD-A.9; UD-A.10
		B. Distinctive Neighborhoods and Residential Design	UD-B.5d; UD-B.6
		C. Mixed-Use Villages and Commercial Areas	UD-C.1; UD-C.4; UD-C.6; UD-C.7
Greenhouse Gas (GHG) Emissions and Alternative Modes of Transportation	Conservation	A. Climate Change and Sustainable Development	CE-A.1; CE-A.2; CE-A.13
		F. Air Quality	CE-F.1 through CE-F.8
		J. Urban Forestry	CE-J.4
		N. Environmental Education	CE-N.3; CE-N.5
	Land Use and Community Planning	I. Environmental Justice	LU-I.11
	Mobility	A. Walkable Communities	ME-A.8; ME-A.9
		B. Transit First	ME-B.1; ME-B.8; ME-B.9; ME-B.10
		C. Street and Freeway System	ME-C.2e; ME-C.4c
		E. Transportation Demand Management	ME-E.1 through ME-E.8;
		G. Parking Management	ME-G.5
		F. Bicycling	ME.F-5
	Urban Design	A. General Urban Design	UD.A-9; UD.A-10; UD-C.4; UD-C.7

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Issues	General Plan Policy		
	Element	Section	Policy
Energy Efficiency	Conservation Element	A. Climate Change and Sustainable Development	CE-A.5; CE-A.6; CE-A.8; CE-A.9; CE-A.11; CE-A.12
		F. Air Quality	CE-F.2; CE-F.3
		I. Sustainable Energy	CE-I.1 through CE-I.13
	Urban Design	A. General Urban Design	UD-A.4; UD.A-5i
Urban Heat Island Effect	Conservation	A. Climate Change and Sustainable Development	CE-A.2; CE-A.5; CE-A.6; CE-A.11; CE-A.12
		E. Urban Runoff Management	CE-E.2c; CE-E.d
		J. Urban Forestry	CE-J.1
	Recreation	A. Park and Recreation Guidelines	RE-A-7
	Urban Design	A. General Urban Design	UD-A.8e; UD-A.12
Waste Management and Recycling	Conservation	A. Climate Change and Sustainable Development	CE-A.2; CE-A.8; CE-A.9; CE-A.10
		C. Coastal Resources	CE-C.7
		D. Water Resources Management	CE-D.1; CE-D.3
		E. Urban Runoff Management	CE-E.6
		F. Air Quality	CE-F.3
		N. Environmental Education	CE-N.4; CE-N.5; CE-N.7
	Public Facilities, Services and Safety	F. Wastewater	PF-F.5
		I. Waste Management	PF-I.1 through PF-I.4
Water Management and Supply	Conservation	A. Climate Change and Sustainable Development	CE-A.2
		D. Water Resources Management	CE-D.1; CE-D.2; CE-D.4
		I. Sustainable Energy	CE-I.4; CE-I.6
	Public Facilities, Services and Safety	H. Water Infrastructure	PF-H.1 through PF-H.3

The Conservation Element reflects key goals contained in many other City and regional plans and programs and will help guide their future updates. Examples of City planning documents and programs that currently address conservation issues are included in Appendix CE-1. The Conservation Element sets forth a citywide vision that ties these various natural resource-based plans and programs together using a village strategy of growth and development. It contains policies for sustainable development, preservation of open space and wildlife, management of resources, and other initiatives to protect the public health, safety and welfare.

A. Climate Change & Sustainable Development

Goals

- To reduce the City's overall carbon dioxide footprint by improving energy efficiency, increasing use of alternative modes of transportation, employing sustainable planning and design techniques, and providing environmentally sound waste management.
- To be prepared for, and able to adapt to adverse climate change impacts.
- To become a city that is an international model of sustainable development and conservation.

Discussion

The energy requirement to maintain the built environment contributes nearly half of the GHG emissions nationally, and the second highest source is from vehicle emissions. In San Diego, vehicle emissions constitute more than half of the region's GHG emissions and are also responsible for almost 80 percent of the smog-forming emissions (see Table CE-2). While climate change is a global problem, at the local level, it is possible to reduce greenhouse gas emissions by fostering sustainable communities through the implementation of sustainable development policies and practices. Climate change goals can be more effectively met when the principles of sustainability are integrated into land use, transportation, conservation, and economic policies.

The City of Villages strategy focuses the City's growth into compact, mixed-use centers of various scales that are linked to the regional transit system, and preserves open space lands. This strategy creates opportunities for more convenient travel by transit, bicycles and foot, which will help reduce local contributions to greenhouse gas emissions that might otherwise occur by reducing the length and number of auto trips. Since the City of Villages strategy seeks to accommodate most of the City's growth needs through infill and redevelopment, it provides an alternative to lower density, auto-oriented development in the outlying areas of the City and region. Close coordination of land use and transportation planning are fundamental for establishing an urban form that integrates principles of sustainability.

There are also opportunities for new structures to reduce energy consumption by adhering to "sustainable building" practices. "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."[1] The City is implementing sustainable development policies that will reduce its environmental footprint, including: conserving resources, following "sustainable building" practices, reducing greenhouse gas emissions, and encouraging clean technologies. In sustainable development

[1] World Commission on Environment and Development, Brundtland Report, 1987.

practices, economic growth is closely tied with environmental, "clean," or "green" technologies and industries. Environmental and economic initiatives are planned and managed together, each reinforcing and being an integral component of the other.

San Diego is well positioned to become a leader in clean technology industries due to its highly qualified workforce, world-class universities and research institutions, and established high technology industries (see also Economic Prosperity Element, Section A). "Clean technologies" incorporate those practices and/or produce products that ultimately meet the goals of a sustainable community. Clean technology encompasses advancements in solar power, wind power, hybrid vehicles, fuel cell technology, tidal and wave power, bioenergy, energy efficient building materials and technologies, and water treatment systems. It often involves substituting biologically-based materials and processes for chemically-based approaches. Clean technology is becoming cost-competitive with its traditional counterparts and offers promising opportunities for new businesses, job creation, and technological innovation in San Diego. Clean technology industries demonstrate that environmental protection and economic competitiveness goals are aligned and mutually beneficial.

Buildings account for nearly half of the total energy used in the United States, and represent a significant portion of the nation's consumption of energy and raw materials, and waste output. Sustainable or "green" buildings use resources such as building materials, water, energy, and land more efficiently than other buildings. "Green" buildings provide an array of environmental, economic and health benefits for building owners and occupants, and help the broader community by conserving resources and reducing pollution. The City's Sustainable Building Policy requires City government projects to achieve the U.S. Green Building Council's LEED silver standard for all buildings and major renovations over 5,000 square feet (Council Policy 900-14), and encourages private developers to use sustainable practices through a permit expedite program.

City of San Diego Refuse and Recyclables Materials

Chapter 14, Article 2, Division 8 of the City of San Diego Municipal Code requires all new multiple unit residential, commercial, and industrial development to provide on-site areas for the storage of refuse and recyclable materials. The purpose of the regulations is to provide permanent, adequate, and convenient space for the collection of refuse and recyclable material.

See also the "Recycling Ordinance" found in Chapter 6, Article 6, Division 7 of the Municipal Code which was adopted in November 2007.

The design of commercial and residential developments is a significant factor in creating what is known as an "Urban Heat Island Effect." Heat islands form as cities replace natural land cover with dark-colored impermeable pavement for roads and parking lots; construct buildings that block natural cooling from wind; and otherwise collect and retain heat so much that a city can be up to ten degrees warmer than nearby open spaces. The hotter it is, the more ground level ozone is created and the more energy is used for cooling. Ground level ozone results in public health impacts that seriously affect sensitive members of the population including people with respiratory problems, the elderly, and children. Implementation of sustainable development practices, including heat island mitigation measures, may reduce temperature increases and the associated Urban Heat Island effects in San Diego.

Policies

CE-A.1. Influence state and federal efforts to reduce greenhouse gas emissions so that implementation requirements are equitably applied throughout the state, and to address actions that are beyond the jurisdiction of local government.

CE-A.2 Reduce the City's carbon footprint. Develop and adopt new or amended regulations, programs, and incentives as appropriate to implement the goals and policies set forth in the General Plan to:

- Create sustainable and efficient land use patterns to reduce vehicular trips and preserve open space;
- Reduce fuel emission levels by encouraging alternative modes of transportation and increasing fuel efficiency;
- Improve energy efficiency, especially in the transportation sector and buildings and appliances;
- Reduce the Urban Heat Island effect through sustainable design and building practices, as well as planting trees (consistent with habitat and water conservation policies) for their many environmental benefits, including natural carbon sequestration;
- Reduce waste by improving management and recycling programs;
- Plan for water supply and emergency reserves.

Refer to Table CE-1, Issues Related to Climate Change Addressed in the General Plan, for a comprehensive list of policies related to each of the above issues.

CE- A.3. Collaborate with climate science experts on local climate change impacts, mitigation, and adaptation, including sea level changes, to inform public policy decisions.

CE- A.4. Pursue the development of "clean" or "green" sector industries that benefit San Diego's environment and economy.

CE-A.5. Employ sustainable or "green" building techniques for the construction and operation of buildings.

a. Develop and implement sustainable building standards for new and significant remodels of residential and commercial buildings to maximize energy efficiency, and to achieve overall net zero energy consumption by 2020 for new residential buildings and 2030 for new commercial buildings. This can be accomplished through factors including, but not limited to:

- Designing mechanical and electrical systems that achieve greater energy efficiency with currently available technology;

- Minimizing energy use through innovative site design and building orientation that addresses factors such as sun-shade patterns, prevailing winds, landscape, and sun-screens;
- Employing self generation of energy using renewable technologies;
- Combining energy efficient measures that have longer payback periods with measures that have shorter payback periods;
- Reducing levels of non-essential lighting, heating and cooling; and
- Using energy efficient appliances and lighting.

b. Provide technical services for "green" buildings in partnership with other agencies and organizations.

CE-A.6 Design new and major remodels to City buildings, and where feasible, long term building leases for City facilities, to achieve at a minimum, the Silver Rating goal identified by the Leadership in Energy and Environmental Design (LEED™) Green Building Rating System to conserve resources, including but not limited to energy and renewable resources.

CE-A.7. Construct and operate buildings using materials, methods, and mechanical and electrical systems that ensure a healthful indoor air quality. Avoid contamination by carcinogens, volatile organic compounds, fungi, molds, bacteria, and other known toxins.

a. Eliminate the use of chlorofluorocarbon-based refrigerants in newly constructed facilities and major building renovations and retrofits for all heating, ventilation, air conditioning, and refrigerant-based building systems.

b. Reduce the quantity of indoor air contaminants that are odorous or potentially irritating to protect installers and occupants' health and comfort. Where feasible, select low-emitting adhesives, paints, coatings, carpet systems, composite wood, agri-fiber products, and others.

CE-A.8. Reduce construction and demolition waste in accordance with Public Facilities Element, Policy PF-I.2, or by renovating or adding on to existing buildings, rather than constructing new buildings.

CE-A.9. Reuse building materials, use materials that have recycled content, or use materials that are derived from sustainable or rapidly renewable sources to the extent possible, through factors including:

- Scheduling time for deconstruction and recycling activities to take place during project demolition and construction phases;
- Using life cycle costing in decision-making for materials and construction techniques. Life cycle costing analyzes the costs and benefits over the life of a particular product, technology, or system;

- Removing code obstacles to using recycled materials in buildings and for construction; and
- Implementing effective economic incentives to recycle construction and demolition debris (see also Public Facilities Element, Policy PF-I.2).

CE-A.10. Include features in buildings to facilitate recycling of waste generated by building occupants and associated refuse storage areas.

a. Provide permanent, adequate, and convenient space for individual building occupants to collect refuse and recyclable material.

b. Provide a recyclables collection area that serves the entire building or project. The space should allow for the separation, collection and storage of paper, glass, plastic, metals, yard waste and other materials as needed.

CE-A.11. Implement sustainable landscape design and maintenance.

a. Use integrated pest management techniques, where feasible, to delay, reduce, or eliminate dependence on the use of pesticides, herbicides, and synthetic fertilizers.

b. Encourage composting efforts through education, incentives, and other activities.

c. Decrease the amount of impervious surfaces in developments, especially where public places, plazas and amenities are proposed to serve as recreation opportunities (see also Recreation Element, Policy RE-A.6 and A.7).

d. Strategically plant deciduous shade trees, evergreen trees, and drought tolerant native vegetation, as appropriate, to contribute to sustainable development goals.

e. Reduce use of lawn types that require high levels of irrigation.

f. Strive to incorporate existing mature trees and native vegetation into site designs.

g. Minimize the use of landscape equipment powered by fossil fuels.

h. Implement water conservation measures in site/building design and landscaping.

i. Encourage the use of high efficiency irrigation technology, and recycled site water to reduce the use of potable water for irrigation. Use recycled water to meet the needs of development projects to the maximum extent feasible. (see Policy CE-A.12).